

## **ABSTRACT**

Some embodiments of the invention provide vias that are not in shape of quadrilaterals.

In some embodiments, some or all vias are in shape of non-quadrilateral polygons, such as octagons and hexagons. In some embodiments, some or all vias have a circular shape. Some embodiments provide a first set of vias that have a diamond shape and a second set of vias that have a rectangular shape. In some embodiments, a via can also be formed by a diamond contact and a rectangular contact. The diamond contact has four sides. In the embodiments described below, all four sides of a diamond via contact have equal sides. However, in other embodiments, a via contact can be in shape of a diamond with a pair of sides that are longer than the other pair of sides. Similarly, in the embodiments described below, the rectangular via contacts are squares with four equal sides. However, in other embodiments, the length and width of a rectangular via contact can differ. Some embodiments of the invention provide interconnect lines that have non-rectangular ends. In some embodiments, the interconnect-line ends are partial octagons, hexagons, and/or circles. Also, some embodiments provide Steiner points that are not rectangular. In some embodiments, the Steiner points are octagonal, hexagonal, or circles.